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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/990,658 | 11/16/2001 | Hiroshi Miyajima | 15082 | 2457 |
| 7590 06/17/2004 | | | | |
| Scully, Scott, Murphy & Presser 400 Garden City Plaza Garden City, NY 11530-0299 | | EXAMINER ALLEN, DENISE S | | |
| | | ART UNIT PAPER NUMBER | | |
| | | 2872 | | |

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|---------------------------------|---|
| Office Action Summary | Application No. 09/990,658 | Applicant(s) MIYAJIMA ET AL. | |
| | Examiner Denise S Allen | Art Unit 2872 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 Nov 16 and 03 Apr 10 and 03 Sep 15 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

In light of the Applicant's amendment to claim 15 on March 29, 2004, the objection to claims 15 – 17 in the Office Action on December 1, 2003 has been withdrawn.

Response to Arguments

Applicant's arguments with respect to claims 1 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claims 1 – 8, 10, 13, and 14 are objected to because of the following informalities: the limitation “the magnetic filed generating elements” (claim 1 line 20) is unclear because of the use of the word “filed”. Suggested correction: replace the word “filed” with “field”. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 4, 6 – 8, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minamoto et al (US 6,122,089).

Regarding claims 1 and 15, Minamoto et al teaches an optical deflector (Figure 18) comprising: a mirror structure (reference 101) having a first surface (reference 106) and a second surface (reference 107) which are in a front/back relation, the mirror structure comprising a pair

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of supports (reference 103), a movable plate (reference 101) which is moved with respect to the supports, and a pair of elastic members (reference 102 as shown in Figure 1) for connecting the movable plate and the supports, such that the movable plate is able to rock with respect to the supports about the pair of elastic members as a rocking axis, the supports having a first surface and a second surface (parallel with references 106 and 107 respectively), which respectively comprise a part of the first surface and a part of the second surface of the mirror structure, the movable plate having a first and a second surface (references 106 and 107), which respectively comprise a part of the first surface and a part of the second surface of the mirror structure, and the movable plate having a mirror surface on the first surface (reference 106); a single plate base (reference 109) for holding the mirror structure, the mirror structure and the base being individual elements, the base having an opening (the gap in the middle of reference 109), the base having bonding portions projecting from the base (reference 108), and the supports of the mirror structure being fixed to the bonding portions of the base by adhesion with the second surfaces of the supports in contact with the bonding portions, so that the mirror structure is positioned remote from the base; and driving means for driving the mirror structure, the driving means including a conductive element (reference 104) formed on the second surface of the movable plate, and magnetic field generating elements (reference 108) fixed on the base and a yoke of magnetic material (reference 109) which cooperates with the magnetic field generating elements to constitute a magnetic circuit (column 12 lines 12 – 16), the magnetic field generating elements being mounted only on the same side of the base as the second surface, and the conductive element being positioned so as to overlap the magnetic field generating elements as viewed from a direction parallel to the first and second surface of the mirror structure (see Figure

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18). Minamoto et al does not teach that the mirror is on the second surface and the conductive element is on the first surface.

Minamoto et al discloses the claimed invention except for the mirror and the conductive element being reversed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to reverse the mirror and the conductive element (so that the mirror is on the second surface and the conductive element is on the first surface), since it has been held that a mere reversal of working parts of a device involves only routine skill in the art. One would have been motivated to reverse the mirror and the conductive element for the purpose of protecting the mirror from scratches by preventing contact with foreign objects.

Regarding claim 2, Minamoto et al teaches the supports include electrode pads (reference 105) electrically connected to the conductive element. Minamoto et al do not teach the base includes wiring materials for electric connection to the outside, the wiring material have connection portions electrically connected to the electrode pads, and the electrode pads are electrically connected to the connection portions by wire bonding.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have the base include wiring material for electric connection to the outside, the wiring material having connection portions electrically connected to the electrode pads by wire bonding in order to be able to supply driving current to the conductive element and drive the mirror structure.

Regarding claims 3 and 4, Minamoto et al do not teach the base comprises a main substrate having the opening, and a rigid substrate fixed to the main substrate, and the wiring materials are formed on the rigid substrate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to form the wiring materials on a rigid substrate fixed to the main substrate of the base in order to reduce the likelihood of the wiring materials breaking due to flexing.

Regarding claim 6, Minamoto et al teaches the base further comprising a flexible substrate (Figure 27 reference 20) formed integrally with the rigid substrate.

Regarding claim 7, Minamoto et al teaches the base further comprising a flexible lead wire (wires on reference 20) connected to the wiring materials of the rigid substrate.

Regarding claims 8 and 15, Minamoto et al teaches the conductive element comprises a coil (Figure 1) disposed along a peripheral edge of the movable plate.

Regarding claim 10, Minamoto et al teaches at least a part of the yoke is disposed in the vicinity of the first surface of the movable plate (Figure 18).

Regarding claim 15, Esashi et al teaches the driving means including permanent magnets (reference 108) fixed on the base.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minamoto et al in view of McClelland et al (US 6,201,629).

Minamoto et al teach an optical deflector as described above. Minamoto et al do not teach the wiring materials including a ground wiring for grounding, and the ground wiring is electrically connected to the conductive main substrate.

McClelland et al teaches an optical deflector where the wiring materials include a ground wiring for grounding, and the ground wiring is electrically connected to the main substrate (column 13 lines 42 – 43). It would have been obvious to one of ordinary skill in the art at the

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time of the invention to use the ground wiring of McClelland et al in the optical deflector of Esashi et al in view of Minamoto et al in order to reduce static charge build-up.

Claims 13, 14, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minamoto et al in view of Esashi et al (EP 0 686 863).

Regarding claims 13 and 16, Minamoto et al teaches an optical deflector as described above. Minamoto et al is silent regarding the size of the opening of the base.

Esashi et al teaches an opening of a base that has a size that does not intercept a light beam incident upon the mirror surface of a time when the movable plate is parallel to the base at an incidence angle of 45° over a full effective width of the mirror surface (Figure 14), and the magnetic field generating elements are located not to intercept a light beam incident upon the mirror surface of the time when the movable plate is parallel to the base at the incidence angle of 45° over the full effective width of the mirror surface (Figure 14). It would have been obvious to one of ordinary skill in the art at the time of the invention to size the opening of the base of Minamoto et al according to the teaching of Esashi et al in order to maximize the amount of light reflected by the mirror.

Regarding claims 14 and 17, Esashi et al teaches the magnetic field generating elements are located interposing the conductive element formed on the first surface of the movable plate, and a mirror surface effective width w_m , interval w_p of the magnetic field generating elements, base opening width w_b , height h_p of the magnetic field generating elements with respect to the mirror surface, and height h_b of an upper surface of the base opening with respect to the mirror surface satisfy conditions: $w_p > w_m + 2h_p$; and $w_b > w_m + 2h_b$ (Figure 11).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise S Allen whose telephone number is (571) 272-2305. The examiner can normally be reached on Monday - Friday, 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

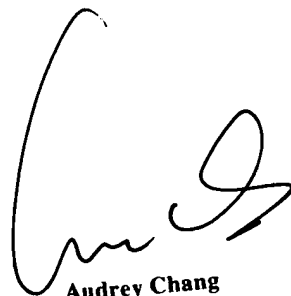
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Denise S Allen
Examiner
Art Unit 2872



dsa



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